

### REMARKS

This is a full and timely response to the non-final Official Action mailed April 10, 2003 (Paper No. 6). Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

By the forgoing amendment, claims 1, 6, 20 and 29 have been amended. Additionally, new claims 37-43 have been added. No original claims have been cancelled. Thus, claims 1-43 are currently pending for the Examiner's consideration.

In the outstanding Office Action, the Examiner indicated that claims 3, 7, 8, 13-17, 19, 22, 25, 26, 28, 31, 32 and 35 contain allowable subject matter. Applicant wishes to thank the Examiner for this identification of allowable subject matter.

On the merits of the application, the recent Office Action objected to the drawings indicating that Figs. 1-5B should be designated as "PRIOR ART." Applicant has considered this objection and takes the following action.

Applicant has submitted herewith replacement Figs. 1-4 which are captioned as "PRIOR ART." Thus, the objection to Figs. 1-4 should be withdrawn.

Applicant disagrees, however, that Figs. 5A and 5B illustrate prior art. Figs. 5A and 5B illustrate a principle that underlies the development of the present invention. Applicant is unaware that the relationships illustrated in Figs. 5A and 5B have been documented in the prior art and, therefore, respectfully declines to so label Figs. 5A and 5B and requests that the

objection to Figs. 5A and 5B be reconsidered and withdrawn. Consequently, the entire objection to the drawings should now be reconsidered and withdrawn.

The recent Office Action next rejected claims 18 and 27 under 35 U.S.C. § 112, first paragraph, on the grounds that "bimorpher material" is not an art recognized term and that claims 18 and 27 are therefore not enabled. Applicant respectfully disagrees.

The term "bimorpher" or "bimorphous" is well-known in the art and describes known materials have the properties described in the specification (*See*, para. 55). For example, U.S. Patent No. 4,916,555 discusses a bimorpher. U.S. Patent No. 5,012,269 describes a bimorphous material. 59 U.S. patents use the term "bimorphous" to describe elements of various devices. Thus, Applicant submits that one of skill in the art would have been able to identify and use a "bimorpher material" as recited in claims 18 and 27.

Consequently, claims 18 and 27 would be enabled to one of skill in the art. Therefore, the rejection of claims 18 and 27 under 35 U.S.C. § 112, first paragraph, should be reconsidered and withdrawn.

With regard to the prior art, claims 1, 2, 4-6, 9, 10, 20, 21, 29, 30 and 36 were rejected as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of U.S. Patent No. 5,675,407 to Geng ("Geng") and U.S. Patent No. 4,648,717 to Ross et al. ("Ross"). For at least the following reasons, this rejection is respectfully traversed.

Claim 1, as amended herein, recites:

A device for creating a three-dimensional profile of an object or scene being imaged, the device comprising:

a light source for illuminating said object or scene with a light pattern, wherein said light pattern has a characteristic that varies across said object or scene and that includes two or more repeated sub-patterns which are arranged sequentially along a single direction across said object or scene;

an image sensor for imaging said object or scene as illuminated with said light pattern; and

a processor for calculating a distance to a point on said object or in said scene based on a baseline distance between said light source and said camera, an angle between said camera and said baseline, and an angle at which light striking the point is emitted by said light source as determined from the characteristic of the light striking the point.

(emphasis added).

Claims 20 and 29 have been amended to recite similar subject matter. New claim 37 also recites similar subject matter.

In contrast, the combined teachings of Geng and Ross fail to teach or suggest the claimed subject matter including a light pattern that includes “two or more repeated sub-patterns which are arranged sequentially along a single direction across said object or scene.” The recent Office Action concedes that Geng teaches only a single varying light pattern that does not include repeating sub-patterns. “Geng (‘407’) does not teach, however, that the light pattern has a characteristic that varies across the object or scene and include two or more sub-patterns.” (Paper No. 6, p. 6).

Consequently, the Office Action seeks to use the teachings of Ross to supplement the teachings of Geng. “Ross teaches in column 4 lines 25-62 a method of three-dimensional measurement that in one embodiment includes using a bi-direction pattern (such as shown in figure 6 or a checkerboard as taught in line 44). A bi-directional pattern consists for example of

one pattern projected in a horizontal direction and a second pattern in a vertical." (Paper No. 6, p. 6). Thus, Ross does not teach or suggest the repeated, sequential sub-patterns recited in the claims and illustrated, for example, in Applicant's Fig. 7C.


Therefore, even if the teachings of Geng and Ross are combined, the combination still fails to teach or suggest "two or more repeated sub-patterns which are arranged sequentially along a single direction across said object or scene" as claimed. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Consequently, the rejection of the claimed invention in view of the combined teachings of Geng and Ross should be reconsidered and withdrawn.

Finally, the recent Office Action rejected claims 1, 2, 4-6, 9, 10, 20, 21, 29, 30 and 36 under the judicially-created doctrine of obviousness-type double patenting in view of claim 6 of Geng in combination with Ross. This rejection is respectfully traversed for at least the following reasons.

As demonstrated above, the claims the present application, as amended herein, are patentably distinct from, and non-obvious over, the combined teachings of Geng and Ross. Consequently, because the claims are patentably distinct over claim 6 of Geng, even in view of Ross, there is no obviousness-type double patenting. Therefore, the double patenting rejection of the claims of this application should also be reconsidered and withdrawn.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If any fees are owed in connection with this paper, which have not been elsewhere authorized, authorization is hereby given to charge those fees to Deposit Account 18-0013 in the name of Rader, Fishman & Grauer PLLC. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Steven L. Nichols', written over a horizontal line.

Steven L. Nichols  
Registration No. 40,326

DATE: 7 July 2003

Steven L. Nichols, Esq.  
Managing Partner, Utah Office  
**Rader Fishman & Grauer PLLC**  
River Park Corporate Center One  
10653 S. River Front Parkway, Suite 150  
South Jordan, Utah 84095

(801) 572-8066  
(801) 572-7666 (fax)